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Nota di contenuto	Foreword -- Introduction -- 1 3D Diffractive Lenses to Overcome the 3D Abby diffraction limit -- 2 Subwavelength Focusing Properties of Diffractive Photonic Crystal Lens -- 3 Photonic Jet Formation By Non Spherical Axially and Spatially Asymmetric 3D Dielectric Particles -- 4 SPP Diffractive Lens as one of the Basic Devices for Plasmonic Information Processing -- Conclusion.
Sommario/riassunto	In this book the authors present several examples of techniques used to overcome the Abby diffraction limit using flat and 3D diffractive optical elements, photonic crystal lenses, photonic jets, and surface

plasmon diffractive optics. The structures discussed can be used in the microwave and THz range and also as scaled models for optical frequencies. Such nano-optical microlenses can be integrated, for example, into existing semiconductor heterostructure platforms for next-generation optoelectronic applications. Chapter 1 considers flat diffractive lenses and innovative 3D radiating structures including a conical millimeter-wave Fresnel zone plate (FZP) lens proposed for subwavelength focusing. In chapter 2 the subwavelength focusing properties of diffractive photonic crystal lenses are considered and it is shown that at least three different types of photonic crystal lens are possible. With the aim of achieving subwavelength focusing, in chapter 3 an alternative mechanism to produce photonic jets at Terahertz frequencies (terajets) using 3D dielectric particles of arbitrary size (cuboids) is considered. A scheme to create a 2D “teraknife” using dielectric rods is also discussed. In the final chapter the successful adaptation of free-space 3D binary phase-reversal conical FZPs for operation on surface plasmon-polariton (SPP) waves demonstrates that analogues of Fourier diffractive components can be developed for in-plane SPP 3D optics. Review ing theory, modelling and experiment, this book will be a valuable resource for students and researchers working on nanophotonics and sub-wavelength focusing and imaging.